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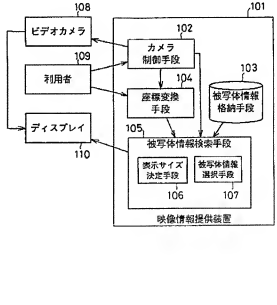
(54)【発明の名称】　映像情報提供方法および装置

(57)【要約】

【課題】　利用者がビデオカメラの向きやズーム率を切り替えながらビデオカメラから実時間に入力される映像上において利用者が直接指定した被写体に関連する情報を提供する映像情報提供方法および装置を提供する。

【解決手段】　ビデオカメラ１０８から入力された映像中の被写体像を単位球面へ写像し、該写像の単位球面上での位置情報およびサイズ情報を被写体に関連する情報に付与して、被写体情報格納手段１０３に記憶しておくとともに、利用者の要求によりビデオカメラの向きまたは映像拡大率をカメラ制御手段１０２で切り替えながら、ビデオカメラから入力される映像の表示画面上において利用者が指定した被写体の画面位置に対応する単位球面上の位置を求め、この位置情報と記憶している位置情報およびサイズ情報を被写体情報検索手段１０５で比較して利用者が指定した画面位置に表示されている被写体に関連する情報を求めている。



【特許請求の範囲】
【請求項１】　ビデオカメラから実時間に入力される映像に映し出される被写体に関連する情報をデータベースに格納しておき、利用者が前記映像上で指定した被写体を識別し、該被写体に関連する情報をデータベースから求めて利用者に提供する映像情報提供方法であって、
前記ビデオカメラを所定の位置に固定して設置するとともに、該ビデオカメラの向きとズーム率は任意に切り替えられるようにしておき、
前記ビデオカメラから入力された映像に映し出される被写体像をビデオカメラの設置位置を原点とした単位球面へ写像し、該写像の単位球面上での位置情報およびサイズ情報を被写体に関連する情報に付与して記憶し、
利用者がビデオカメラの向きまたはズーム率の変更を要求したときは、該要求に従ってビデオカメラの向きまたは映像拡大率を切り替え、
利用者がビデオカメラから入力される映像の表示画面上で被写体を指定したときは、指定した画面位置に対応する前記単位球面上の位置を求め、この求めた位置情報と記憶している前記位置情報およびサイズ情報を比較することで利用者が指定した画面位置に表示されている被写体に関連する情報を求めることを特徴とする映像情報提供方法。
【請求項２】　前記求めた１つまたは複数の関連情報のそれぞれについて関連情報に付与されている前記位置情報およびサイズ情報と利用者が指定した時点のビデオカメラの向きおよびズーム率を用いて、前記関連情報に対応する被写体の映像表示画面上での表示サイズを求め、この求めた表示サイズが所定の範囲内にある場合のみ該関連情報を利用者へ提供することを特徴とする請求項１記載の映像情報提供方法。
【請求項３】　ビデオカメラから実時間に入力される映像中に存在する被写体に関連する情報をデータベースに格納しておき、利用者が前記映像上で指定した被写体を識別し、該被写体に関連する情報をデータベースから求めて利用者へ提供する映像情報提供装置であって、
利用者の要求に従ってビデオカメラの向きまたはズーム率を制御するカメラ制御手段と、
前記ビデオカメラから入力される映像に映し出される被写体像をビデオカメラの設置位置を原点とした単位球面へ写像し、該写像の単位球面上での位置情報およびサイズ情報を該被写体に関連する情報に付与して記憶する被写体情報格納手段と、
利用者がビデオカメラから入力される映像の表示画面上で指定した画面位置に対応する前記単位球面上の位置を求める座標変換手段と、
該座標変換手段を用いて求めた前記位置情報と前記被写体情報格納手段に記憶されている前記位置情報およびサイズ情報を比較して利用者が指定した前記画面位置に表示されている被写体に関連する情報を求める被写体情報検索手段とを有することを特徴とする映像情報提供装置。
【請求項４】　前記被写体情報検索手段は、前記求めた１つまたは複数の関連情報のそれぞれについて関連情報に付与されている前記位置情報およびサイズ情報と利用者が指定した時点のビデオカメラの向きおよびズーム率を用いて、前記関連情報に対応する被写体の映像表示画面上での表示サイズを求める表示サイズ決定手段と、該表示サイズ決定手段で求めた表示サイズが所定の範囲内にある被写体の関連情報のみを選択する被写体情報選択手段とを有することを特徴とする請求項３記載の映像情報提供装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ビデオカメラで撮像した映像中の被写体に関連する情報を利用者に提供する映像情報提供方法および装置に関し、更に詳しくは、利用者がビデオカメラの向きとズーム率を切り替えながらビデオカメラから実時間に入力される映像上において利用者が指定した被写体に関連する情報をデータベースから検索して利用者に提供する映像情報提供方法および装置に関する。
【０００２】
【従来の技術】複数ある操作ボタンのそれぞれにビデオカメラの向きとズーム率を対応付けて記憶しておき、利用者により操作ボタンが押されると、その操作ボタンに対応するビデオカメラの向きとズーム率に合うようにビデオカメラを動かす装置が、例えば雑誌「映像情報」（産業開発機構（株）出版）の１９９４年９月号掲載の記事「プリセット（自動追尾）システム」に示されている。この装置においては、ビデオカメラにより捕らえることのできる被写体毎にそれを中心に映し出すためのビデオカメラの向きとズーム率を求めて操作ボタンに記憶し、対応する被写体の名前を操作ボタンのラベルとして付与すれば、被写体が存在する位置が変化しない限り、利用者は見たい被写体を名前で指定し、その映像をビデオカメラを通して見ることができる。
【０００３】ビデオカメラの向きとズーム率に加えて、更に被写体の特徴を記述したテキスト等の関連情報も操作ボタンに対応付けて記憶しておけば、利用者が指定した被写体の映像に合わせてその関連情報を提供することも可能である。
【０００４】
【発明が解決しようとする課題】上述した従来の映像情報提供方法は、利用者が興味のある被写体の名前を知っており、被写体の名前からその映像と関連情報を検索したい場合には適用できるものの、利用者が映像を見て興味を持った被写体を映像上で直接的に指定し、その名前や関連情報を検索することはできないという問題があった。

【０００５】本発明は、上記に鑑みてなされたもので、その目的とするところは、利用者がビデオカメラの向きやズーム率を切り替えながらビデオカメラから実時間に入力される映像上において利用者が直接指定した被写体に関連する情報を提供する映像情報提供方法および装置を提供することにある。

【０００６】

【課題を解決するための手段】上記目的を達成するため、請求項１記載の本発明は、ビデオカメラから実時間に入力される映像に映し出される被写体に関連する情報をデータベースに格納しておき、利用者が前記映像上で指定した被写体を識別し、該被写体に関連する情報をデータベースから求めて利用者に提供する映像情報提供方法であって、前記ビデオカメラを所定の位置に固定して設置するとともに、該ビデオカメラの向きとズーム率は任意に切り替えられるようにしておき、前記ビデオカメラから入力された映像に映し出される被写体像をビデオカメラの設置位置を原点とした単位球面へ写像し、該写像の単位球面上での位置情報およびサイズ情報を被写体に関連する情報に付与して記憶し、利用者がビデオカメラの向きまたはズーム率の変更を要求したときは、該要求に従ってビデオカメラの向きまたは映像拡大率を切り替え、利用者がビデオカメラから入力される映像の表示画面上で被写体を指定したときは、指定した画面位置に対応する前記単位球面上の位置を求め、この求めた位置情報と記憶している前記位置情報およびサイズ情報を比較することで利用者が指定した画面位置に表示されている被写体に関連する情報を求めることを要旨とする。

【０００７】請求項１記載の本発明にあっては、ビデオカメラから入力された映像中の被写体像を単位球面へ写像し、該写像の単位球面上での位置情報およびサイズ情報を被写体に関連する情報に付与して記憶しておくとともに、利用者の要求によりビデオカメラの向きまたは映像拡大率を切り替えながら、ビデオカメラから入力される映像の表示画面上において利用者が指定した被写体の画面位置に対応する単位球面上の位置を求め、この位置情報と記憶している位置情報およびサイズ情報を比較して、利用者が指定した画面位置に表示されている被写体に関連する情報を求めている。

【０００８】また、請求項２記載の本発明は、請求項１記載の発明において、前記求めた１つまたは複数の関連情報のそれぞれについて関連情報に付与されている前記位置情報およびサイズ情報と利用者が指定した時点のビデオカメラの向きおよびズーム率を用いて、前記関連情報に対応する被写体の映像表示画面上での表示サイズを求め、この求めた表示サイズが所定の範囲内にある場合のみ該関連情報を利用者へ提供することを要旨とする。

【０００９】請求項２記載の本発明にあっては、関連情報に対応する被写体の映像表示画面上での表示サイズを求め、この表示サイズが所定の範囲内にある場合のみ該関連情報を利用者へ提供する。

【００１０】更に、請求項３記載の本発明は、ビデオカメラから実時間に入力される映像中に存在する被写体に関連する情報をデータベースに格納しておき、利用者が前記映像上で指定した被写体を識別し、該被写体に関連する情報をデータベースから求めて利用者へ提供する映像情報提供装置であって、利用者の要求に従ってビデオカメラの向きまたはズーム率を制御するカメラ制御手段と、前記ビデオカメラから入力される映像に映し出される被写体像をビデオカメラの設置位置を原点とした単位球面へ写像し、該写像の単位球面上での位置情報およびサイズ情報を該被写体に関連する情報に付与して記憶する被写体情報格納手段と、利用者がビデオカメラから入力される映像の表示画面上で指定した画面位置に対応する前記単位球面上の位置を求める座標変換手段と、該座標変換手段を用いて求めた前記位置情報と前記被写体情報格納手段に記憶されている前記位置情報およびサイズ情報を比較して利用者が指定した前記画面位置に表示されている被写体に関連する情報を求める被写体情報検索手段とを有することを要旨とする。

【００１１】請求項３記載の本発明にあっては、ビデオカメラから入力された映像中の被写体像を単位球面へ写像し、該写像の単位球面上での位置情報およびサイズ情報を被写体に関連する情報に付与して記憶しておくとともに、利用者の要求によりビデオカメラの向きまたはズーム率を制御しながら、ビデオカメラから入力される映像の表示画面上において利用者が指定した被写体の画面位置に対応する単位球面上の位置を求め、この位置情報と記憶している位置情報およびサイズ情報を比較して、利用者が指定した画面位置に表示されている被写体に関連する情報を求めている。

【００１２】また更に、請求項４記載の本発明は、請求項３記載の発明において、前記被写体情報検索手段は、前記求めた１つまたは複数の関連情報のそれぞれについて関連情報に付与されている前記位置情報およびサイズ情報と利用者が指定した時点のビデオカメラの向きおよびズーム率を用いて、前記関連情報に対応する被写体の映像表示画面上での表示サイズを求める表示サイズ決定手段と、該表示サイズ決定手段で求めた表示サイズが所定の範囲内にある被写体の関連情報のみを選択する被写体情報選択手段とを有することを要旨とする。

【００１３】請求項４記載の本発明にあっては、関連情報に対応する被写体の映像表示画面上での表示サイズが所定の範囲内にある被写体の関連情報のみを選択する。

【００１４】

【発明の実施の形態】以下、図面を用いて本発明の実施の形態について説明する。

【００１５】図１は、本発明の実施の形態に係る映像情報提供方法を実施する映像情報提供装置の構成を示すブロック図である。同図において、１０１は映像情報提供

装置、１０２はカメラ制御手段、１０３は被写体情報格納手段、１０４は座標変換手段、１０５は被写体情報検索手段、１０６は表示サイズ決定手段、１０７は被写体情報選択手段、１０８はビデオカメラ、１０９は利用者、１１０はディスプレイである。

【００１６】ビデオカメラ１０８は、例えば上下左右の４方向に回転可能な雲台に取り付けられており、カメラ制御手段１０２により遠隔的に操作してカメラの向きを変更することが可能な構成となっている。更に、レンズのズーム率も可変であり、これもカメラ制御手段１０２により遠隔操作可能となっている。但し、ビデオカメラ１０８の設置位置は固定されていることとする。ビデオカメラ１０８から入力される映像はディスプレイ１１０上へ表示される。

【００１７】カメラ制御手段１０２は、利用者１０９からビデオカメラ１０８の向きあるいはズーム率を変更するための要求を受け付け、要求された向きあるいはズーム率に合うようにビデオカメラ１０８を制御する。例えば、利用者１０９がディスプレイ１１０に現在表示されている映像中の空間のもう少し右側を見たいときは、ビデオカメラ１０８を右方向へ回転させるための要求をカメラ制御手段１０２に与えることでビデオカメラ１０８を右方向へ動かし、所望の空間を映し出すことができる。例えば、利用者１０９がディスプレイ１１０に現在表示されている映像中の被写体をもう少し大きくして見たいときは、ビデオカメラ１０８のズーム率を増加させるための要求をカメラ制御手段１０２に与えることでビデオカメラ１０８のズーム率を上げ、被写体を所望のサイズに拡大して見ることができる。なお、利用者１０９がビデオカメラ１０８の向きあるいはズーム率の変更を要求するための手法としては、ディスプレイ１１０上に操作パネルを表示する方法や、遠隔制御用のコントローラを設ける方法等が考えられる。

【００１８】被写体情報格納手段１０３は、現実の世界で存在位置が変化しない被写体について、各被写体の特徴を記述したテキスト等の関連情報を記憶している。各被写体の関連情報には、その被写体がビデオカメラ１０８などの方向へ向けたときに映像中に現れるかを示す位置情報およびサイズ情報が付与されている。位置情報およびサイズ情報は、ビデオカメラ１０８の設置位置を原点とした単位球面を利用して、例えば図２に示すように定義できる。図２において、ビデオカメラは原点Ｏに固定して設置されている。単位球面Ｒ上の任意の点は、例えば、ＸＹ平面上でのＸ軸からＹ軸方向への回転角θと、ＸＹ平面からＺ軸方向への回転角γを用いた極座標（θ，γ）によりその位置を表現できる。従って、図２における被写体Ｔの位置情報およびサイズ情報は、例えば、被写体Ｔの中心点Ｇおよび被写体Ｔを囲む矩形の四隅の点Ａ，Ｂ，Ｃ，Ｄをそれぞれ単位球面上へ写像し、写像点ｇ，ａ，ｂ，ｃ，ｄの位置を表す極座標の組{（θ_g，γ_g），（θ_a，γ_a），（θ_b，γ_b），（θ_c，γ_c），（θ_d，γ_d）}として表現できる。

【００１９】座標変換手段１０４は、利用者１０９が例えばマウスのようなポインティング装置を用いてディスプレイ１１０上に表示されている映像上で特定の被写体を指定すると、指定された画面位置Ｐに対応する前記単位球面Ｒ上の点ｐを例えば次のように求める。図３の例に示すように、ビデオカメラ１０８を特定の方向に向けた状態において、ディスプレイ１１０に表示される映像の中心点Ｍは常に前記単位球面Ｒ上の一意の点ｍに対応付けられる。一方、映像表示画面の四隅の点Ｈ，Ｉ，Ｊ，Ｋに対応する単位球面Ｒ上の点ｈ，ｉ，ｊ，ｋはビデオカメラ１０８のズーム率により変化する。ビデオカメラ１０８のズーム率と点ｈ，ｉ，ｊ，ｋの関係は使用するビデオカメラ１０８によって異なるが、ビデオカメラ１０８毎にこの関係を数式あるいは対応表を用いて定義できる。座標変換手段１０４は、利用者１０９が映像表示画面上で被写体を指定すると、カメラ制御手段１０２を用いてその時点のビデオカメラ１０８の向きおよびズーム率を求める。

【００２０】次に、求めたビデオカメラ１０８の向きから現在表示されている映像の中心点Ｍに対応する単位球面Ｒ上の点ｍの座標を求める。次に、求めたビデオカメラ１０８のズーム率および点ｍの座標を用いて、その時点の点ｈ，ｉ，ｊ，ｋの座標を求める。そして、利用者１０９が指定した画面位置Ｐに対応する単位球面Ｒ上の点ｐの座標を、求めた点ｈ，ｉ，ｊ，ｋの座標および点Ｈ，Ｉ，Ｊ，Ｋと点Ｐの相対的な位置関係から算出する。座標変換手段１０４は、求めた点ｐの座標を被写体情報検索手段１０５に与える。

【００２１】被写体情報検索手段１０５は、被写体情報格納手段１０３に格納されている被写体の関連情報を読み出し、それらに付与されている前記位置情報およびサイズ情報と座標変換手段１０４から与えられる点ｐの座標を比較し、利用者１０９が指定した映像表示画面上に存在する被写体の関連情報を検索する。被写体情報に付与されている単位球面Ｒ上での位置情報およびサイズ情報が、例えば前述のように被写体像を囲む矩形の四隅ａ，ｂ，ｃ，ｄの座標を含んでいれば、点ｐの座標が各被写体を囲む矩形に含まれるかどうかをチェックすることで該当する関連情報を選別できる。検索により得られる関連情報は必ずしも１つ以下であるとは限らない。例えば、「自動車」全体を被写体として捉えてその名前や年式といった関連情報を被写体情報格納手段１０３へ格納するとともに、その自動車の一部品である「タイヤ」も独立した１つの被写体として捉えてそのメーカやサイズといった関連情報も同時に被写体情報格納手段１０３へ格納するならば、利用者１０９が映像表示画面上で「自動車」の「タイヤ」を指定したとき、被写体情報検索手段１０５を用いて得られる関連情報は、「自動車」

に関連する情報と「タイヤ」に関連する情報の両方となる。

【００２２】更に詳しくは、被写体に関連する情報としては、被写体の画像情報のみならず、該画像情報をキーとして該画像情報に関する特性データや構造データ等の数字データ情報等も関連情報として提供できることに加えて、この被写体に関連する情報としては、上述したように表示画面に直接的に現れている被写体の情報のみでなく、通常存在すると考えられるが直接的には見えない間接的なもの、例えば自動車のボンネットが表示された場合には、このボンネットの下側に通常存在していると考えられる例えば「エンジン」等も関連情報として提供することができるものであり、このエンジンの関連情報としては、その画像情報のみならず、その性能や構造等の特性データ等の情報も提供できるものである。

【００２３】次に、被写体情報検索手段１０５は、検索で得られた１つあるいは複数の関連情報について、各関連情報に対応する被写体のその時点での画面表示サイズを、表示サイズ決定手段１０６を用いて例えば次のように求める。まず、カメラ制御手段１０２を用いてその時点のビデオカメラ１０８の向きおよびズーム率を求める。次に、座標変換手段１０４と同様の手法で映像表示画面の四隅の点Ｈ，Ｉ，Ｊ，Ｋに対応する単位球面Ｒ上の点ｈ，ｉ，ｊ，ｋを求める。次に、求められた点ｈ，ｉ，ｊ，ｋの座標と各関連情報に付与されている前記位置情報およびサイズ情報を用いて、各被写体像が映像表示画面の何割の領域を占めているかを算出し、それを各被写体の画面表示サイズとする。

【００２４】更に被写体情報検索手段１０５は、検索で得られた１つあるいは複数の関連情報について、表示サイズ決定手段１０６により求めた前記画面表示サイズが所定の条件を満たすものを被写体情報選択手段１０７を用いて選択し、選択した関連情報のみをディスプレイ１１０に表示して利用者１０９へ提供する。被写体情報検索手段１０５を用いて検索された関連情報は、そのすべてが利用者１０９により求められているものであるとは限らない。例えば、上述の「自動車」と「タイヤ」の例において、利用者１０９が映像表示画面上で「タイヤ」を指定すると、被写体情報検索手段１０５を用いて「自動車」に関連する情報と「タイヤ」に関連する情報の２つが得られるが、この時利用者１０９が「タイヤ」をズームアップした状態で指定したのであれば、利用者１０９へ提供すべき適切な関連情報は「タイヤ」に関するもののみである。一方、「自動車」全体が画面に映っており、「タイヤ」は興味の対象とならないほど小さく表示されている状態であれば、利用者１０９の関心は「自動車」に関連する情報であると判断できる。被写体情報選択手段１０７は、以上述べたような関連情報の選択を、表示サイズ決定手段１０６により求めた被写体の画面表示サイズに基づいて行う。該画面表示サイズが映像表示画面を占める被写体像の割合として表されているならば、例えば３０％以上かつ８０％以下というような範囲条件を設け、この条件を満たす表示サイズを付与されている関連情報のみを選択する。ここでは映像表示画面を占める被写体像の割合のみを用いて関連情報を選択する例を示したが、被写体の中心が映像表示画面のどの位置に存在するか等の情報を更に用いることで、より的確な選択を実現することも可能である。

【００２５】

【発明の効果】以上説明したように、本発明によれば、利用者がビデオカメラの向きやズーム率を切り替えながら、ビデオカメラから入力される映像の表示画面上において利用者が指定した被写体に関連する情報を検索して利用者に提供しているので、利用者は検索したい該写体の名前やそのキーワード等を知らなくても映像上の被写体そのものを直接指定するだけで該被写体の関連情報を得ることができる。例えば、自動車の見本市等で多数の自動車を利用者に提示し、利用者がある自動車を指定すると、その自動車がズームアップされるとともに、そのデータが表示され、利用者がその自動車のボンネットを指示すると、エンジンの詳細な図とデータが表示されるなどのように映像を中心としたマルチメディア情報利用上の非常に顕著な利点がある。

【図面の簡単な説明】

【図１】本発明の実施の形態に係る映像情報提供方法を実施する映像情報提供装置の構成を示すブロック図である。

【図２】図１の映像情報提供装置に使用されている被写体情報格納手段へ格納する位置情報およびサイズ情報の定義方法を説明するための図である。

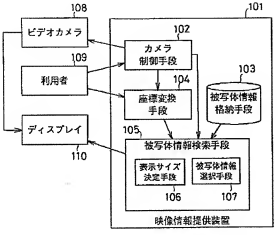
【図３】図１の映像情報提供装置の座標変換手段の機能を説明するための図である。

【符号の説明】

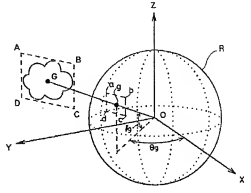
１０１　映像情報提供装置
１０２　カメラ制御手段
１０３　被写体情報格納手段
１０４　座標変換手段
１０５　被写体情報検索手段
１０６　表示サイズ決定手段
１０７　被写体情報選択手段
１０８　ビデオカメラ
１０９　利用者
１１０　ディスプレイ
Ｔ　被写体
Ａ，Ｂ，Ｃ，Ｄ　Ｔを囲む矩形
Ｇ　Ｔの中心
Ｒ　単位球面
Ｘ，Ｙ，Ｚ　座標軸
Ｏ　原点
ａ，ｂ，ｃ，ｄ　Ａ，Ｂ，Ｃ，Ｄの単位球上への写像

g　GのR上への写像
θ_g，γ_g　gの極座標
H，I，J，K　映像表示画面
M　H，I，J，Kの中心
P　利用者の指定位置
h，i，j，k　H，I，J，KのR上への写像
m　MのR上への写像
p　PのR上への写像

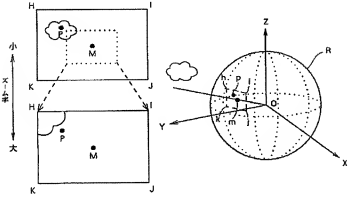
【図１】



【図２】



【図３】



EFFECT OF THE INVENTION

[Effect of the Invention] Since according to this invention the information relevant to the photographic subject which the user specified on the display screen of an image inputted from a video camera is retrieved and it provides for a user while a user changes the sense and the rate of a zoom of a video camera as explained above, even if a user knows neither the identifier of a photographic subject to search, nor its keyword, he can get the related information of this photographic subject only by specifying the photographic subject on an image itself directly. For example, many automobiles are shown to a user in the trade fair of an automobile etc., and there is a very remarkable advantage on multimedia information utilization centering on an image like [if an automobile with a user is specified, while the automobile will zoom in / when the data is displayed and a user directs the bonnet of the automobile] engine detailed drawing and data being displayed.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the configuration of the image information offer equipment which enforces the image information offer approach concerning the gestalt of operation of this invention.
[Drawing 2] It is drawing for explaining the definition approach of the positional information stored in the photographic subject information storing means currently used for the image information offer equipment of drawing 1 , and size information.
[Drawing 3] It is drawing for explaining the function of the coordinate transformation means of the image information offer equipment of drawing 1 .
[Description of Notations]
101 Image Information Offer Equipment
102 Camera-Control Means
103 Photographic Subject Information Storing Means
104 Coordinate Transformation Means
105 Photographic Subject Information Retrieval Means
106 Display-Size Decision Means
107 Photographic Subject Information Selection Means
108 Video Camera
109 User
110 Display
T Photographic subject
A, B, C, D Rectangle surrounding T
G The core of T
R Unit sphere
X, Y, Z Axis of coordinates
O Zero
a, b, c, d R onto mapping of A, B, C, and D
g R onto mapping of G
thetag, gammag Polar coordinate of g
H, I, J, K Graphic display screen
M The core of H, I, J, and K
P A user's specified location
h, i, j, k R onto mapping of H, I, J, and K
m R onto mapping of M
p R onto mapping of P

[Translation done.]

* NOTICES *

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damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates in more detail to the image information offer approach and the equipment with which retrieve from a database the information relevant to the photographic subject which the user specified on the image inputted at the real time from the video camera, and a user provides about the image information offer approach and the equipment which provide a user with the information relevant to the photographic subject in the image picturized with the video camera, while a user changes the sense and the rate of a zoom of a video camera.
[0002]
[Description of the Prior Art] The sense and the rate of a zoom of a video camera are matched and memorized to each of the manual operation button which has more than one, and if a manual operation button is pushed by the user, the equipment to which a video camera is moved so that the sense and the rate of a zoom of a video camera corresponding to the manual operation button may be suited is shown in the report "a presetting (automatic tracking) system" of the September, 1994 issue printing of a journal "image information" (Industrial Development Device publication). If the identifier of the photographic subject which memorizes and corresponds to a manual operation button in quest of the sense and the rate of a zoom of a video camera for projecting focusing on it in this equipment for every photographic subject which can be caught with a video camera is given as a label of a manual operation button, unless the location where a photographic subject exists will change, a user can specify a photographic subject to see by the identifier, and can see that image through a video camera.
[0003] In addition to the sense and the rate of a zoom of a video camera, also match with a manual operation button related information, such es a text which described the description of a photographic subject further, and it is memorized, and it is possible to offer the releted information according to the image of the photographic subject specified by a user.
[0004]
[Problem(s) to be Solved by the Invention] Although the conventional image information offer approach mentioned above could be applied when the user knew the identifier of an interested photographic subject and wanted to search the image and related information from the identifier of e photographic subject, it specified directly the photographic subject in which the user looked at the image and got interested on the image, and had the problem that the identifier or related information could not be searched.
[0005] This invention was made in view of the above, and the place made into the object is to offer the image information offer approach and equipment which offer the information relevant to the photographic subject which the user specified directly on the imege inputted at the real time from the video camera, while a user changes the sense and the rate of a zoom of a video camera.
[0006]
[Means for Solving the Problem] In order to attain the above-mentioned object, this invention according to claim 1 The information relevant to the photographic subject projected on the image inputted from a video camera at the real time is stored in the database. While a user is the imege information offer approach with which identifies the photographic subject specified on said image, and a user is provided in quest of the information relevant to this photographic subject from a database and fixes and installs said video camera in a position The sense and the rate of a zoom of this video camera are changed to arbitration. The photographic subject image projected on the image inputted from said video camera is mapped to the unit sphere which made the installation location of a video camera the zero. When the positional information and size information on the unit sphere of this map are given to the information relevant to a photographic subject, and ere memorized and a user demands modification of the sense of a video camera, or the rate of a zoom When the sense or image dilation ratio of a video camera is changed according to this demand and a user specifies a photographic subject on the display screen of an image inputted from a video camera Let it be a summary to ask for the location on said unit sphere corresponding to the specified screen location, and to search for the information relevant to the photographic subject currently displayed on the screen location which the user specified by comparing said positional information and size information which have been remembered to be this positional information searched for.
[0007] If it is in this invention according to claim 1, while mapping the photographic subject image in the image inputted from the video camera to an unit sphere, giving the positional information and size information on the unit sphere of this map to the information relevant to a photographic subject and memorizing them Changing the sense or image dilation ratio of a video camera by demand of a user Ask for the location on the unit sphere corresponding to the screen location of a photographic subject which the user specified on the display screen of an image inputted from a video camera, and the positional information and size information which have been remembered to be this positional information are compared. The information relevant to the photographic subject currently displayed on the screen location specified by a user is searched for.
[0008] Moreover, the sense and the rate of a zoom of a video camera at the time of said positional information and size information which are given to related information about each of one or more of said related information for which it asked, and a user specifying in invention according to claim 1 are used for this invention according to claim 2. Only when you ask for the display size on the graphic display screen of the photographic subject corresponding to said related information and this display size for which it asked is within the limits of predetermined, let it be a summary to offer this related information to a user.
[0009] If it is in this invention according to claim 2, it asks for the display size on the graphic display screen of the photographic subject corresponding to related information, and only when this display size is within the limits of predetermined, this related information is offered to a user.
[0010] Furthermore, this invention according to claim 3 stores in the database the information relevant to the photographic subject which exists in the image inputted from a video camera at the real time. It is image information offer equipment which a user identifies the photographic subject specified on said image, and offers from a database to a user in quest of the information relevant to this photographic subject. A camera-control means to control the sense or the rate of a zoom of a video camera according to a demand of a user, The photographic subject image projected on the image inputted from said video camera is mapped to the unit sphere which made the installation location of a video camera the zero. A photographic subject information storing means to give the positional information and size

information on the unit sphere of this map to the information relevant to this photographic subject, and to memorize them, A coordinate transformation means to ask for the location on said unit sphere corresponding to the screen location which the user specified on the display screen of an image inputted from a video camera, Let it be a summary to have a photographic subject information retrieval means to search for the information relevant to the photographic subject currently displayed on said screen location which compared said positional information searched for using this coordinate transformation means, said positional information memorized by said photographic subject information storing means, and size information, and the user specified.

[0011] If it is in this invention according to claim 3, while mapping the photographic subject image in the image inputted from the video camera to an unit sphere, giving the positional information and size information on the unit sphere of this map to the information relevant to a photographic subject and memorizing them Controlling the sense or the rate of a zoom of a video camera by demand of a user Ask for the location on the unit sphere corresponding to the screen location of a photographic subject which the user specified on the display screen of an image inputted from a video camera, and the positional information and size information which have been remembered to be this positional information are compared. The information relevant to the photographic subject currently displayed on the screen location specified by a user is searched for.

[0012] This invention according to claim 4 is set to invention according to claim 3. Furthermore, said photographic subject information retrieval means The sense and the rate of a zoom of a video camera at the time of said positional information and size information which are given to related information about each of one or more of said related information for which it asked, and a user specifying are used. The display size for which it asked with a display-size decision means to esk for the display size on the graphic display screen of the photographic subject corresponding to said related information, and this display-size decision means makes it a summary to have a photographic subject information selection means to choose only the related information of the photographic subject which is within the limits of predetermined.

[0013] If it is in this invention according to claim 4, the display size on the graphic display screen of the photographic subject corresponding to related information chooses only the related information of the photographic subject which is within the limits of predetermined.

[0014]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained using a drawing.

[0015] Drawing 1 is the block diagram showing the configuration of the image information offer equipment which enforces the image information offer approach concerning the gestalt of operation of this invention. this drawing — setting — 101 — image information offer equipment and 102 — a camera-control means and 103 — a photographic subject information storing means and 104 — for e display-size decision means and 107, es for a video camera and 109, a photographic subject information selection means and 108 are [a coordinate transformation means and 105 / a photographic subject information retrieval means and 106 / a user and 110] displays.

[0016] The video camera 108 is attached in the four directions of vertical and horizontal at the pivotable universal head, and has composition which it is remotely operated with the camera-control means 102, and can change the sense of a camera. Furthermore, the rate of a zoom of a lens is also adjustable and this can also operate it by remote control with the camera-control means 102. However, suppose thet the installation location of e video camera 108 is being fixed. The image inputted from a video camera 108 is displayed on up to a display 110.

[0017] The camere-control means 102 controls e video camera 108 to receive the demand for changing the sense or the rate of a zoom of a video camera 108 from e user 109, and to suit the demanded sense or the rate of e zoom. For exemple, e video camera 108 can be moved rightward by giving the demend for rotating a video camera 108 rightward to the camera-control means 102 and desired space can be projected [of the space in the image as which the user 109 is displayed on the display 110 now] to see right-hand side to a slight degree. For example, when a user 109 wants to enlarge the photographic subject in the image displayed on the display 110 now to a slight degree, and to see it, by giving the camera-control means 102, the rate of a zoom of a video camera 108 can be expanded to the size of a request of raising and a photographic subject, and the demand for making the rate of a zoom of a video camere 108 increase can be seen. In addition, es technique for a user 109 to demand modification of the sense of a video camera 108, or the rate of e zoom, how to display a control panel on a display 110, the method of forming the controller for remote control, etc. can be considered.

[0018] The photographic subject information storing means 103 has memorized related information, such as a text which described the description of each photographic subject about the photographic subject from which an existence location does not change in the actual world. When the photographic subject turns a video camera 108 which direction, the positional information and size information which show whether it appears in an image are given to the related information of each photographic subject. Positional information and size information can be defined as the installation location of a video camera 108 is shown in drawing 2 , using the unit sphere made into the zero. In drawing 2 , the video camera is fixed and installed in Zero O. The point of the arbitration on an unit sphere R can express the location by the polar coordinate (theta, gamma) which used the angle of rotation theta from the X-axis for example, on XY flat surface to Y shaft orientations, and the angle of rotation gamma from XY flat surface to Z sheft orientations. Therefore, the positional information and size information on a photographic subject T in drawing 2 For example, the points A, B, C, and D of the four corners of the rectangle surrounding the central point G of a photographic subject T and a photographic subject T are mapped to up to an unit sphere, respectively. a map — a point — g — a — b — c — d — a location — expressing — a polar coordinate — a group — ((thetag and gammag) — (— theta — a — gamma — a —) — (— theta — b — gamma — b —) — (— theta — c — gamma — c —) —) (thetag and gammad) — ****** — it can express .

[0019] The coordinate transformation means 104 will search for the point p on said unit sphere R corresponding to the specified screen location P as follows, for example, if a user 109 specifies a specific photographic subject on the image currently displayed on the display 110 using pointing equipment like a mouse. As shown in the example of drawing 3 , in the condition of having turned the video camera 108 in the specific direction, the central point M of the image displayed on a display 110 is always matched with the point m of a meaning on said unit sphere R. On the other hand, the points h, i, j, and k on the unit sphere R corresponding to the points H, I, J, and K of the four corners of a graphic display screen change with the rates of a zoom of a video camera 108. Although the rate of a zoom of a video camera 108 and the relation of Points h, i, j, and k change with video cameras 108 to be used, this relation can be defined using a formula or a conversion table every video camera 108. The coordinate transformation means 104 will ask for the sense and the rate of a zoom of a video camera 108 at the event using the camera-control means 102, if a user 109 specifies a photographic subject on a graphic display screen.

[0020] Next, the coordinate of the point m on the unit sphere R corresponding to the central point M of the image by which it is indicated by current from the sense of the video camera 108 for which it asked is searched for. Next, the coordinate of the points h, i, j, and k at the event is searched for using the rate of a zoom of the video camera 108 for which it asked, and the coordinate of Point m. And the coordinate of the point p on the unit sphere R corresponding to the screen location P specified by a user 109 is computed from the relative physical relationship of the coordinate of Points h, i, j, and k and Points H, I, J, and K which were searched for, and Point P. The coordinate transformation means 104 gives the coordinate of the point p searched for to the photographic subject information retrieval means 105.

[0021] The photographic subject information retrieval means 105 reads the related information of the photographic subject stored in the photographic subject information storing means 103, compares the coordinate of the point p given from said positional information and size information which are given to them, and the coordinate transformation means 104, and searches the related information of the photographic subject which exists on the graphic display screen specified by a user 109. If the positional information and size information on

the unit sphere R given to photographic subject information include the coordinate of the four corners a, b, c, and d of the rectangle which surrounds a photographic subject image as mentioned above, the coordinate of Point p can sort out the related information which corresponds with confirming whether it is contained in the rectangle surrounding each photographic subject. The related information obtained by retrieval is not necessarily one or less. For example, while regarding the whole "automobile" as a photographic subject and storing related information called the identifier and model in the photographic subject information storing means 103 If it regards as one photographic subject with which the "tire" of the automobile which is elegance a part became independent and related information called the manufacturer and size is also simultaneously stored in the photographic subject information storing means 103 When a user 109 specifies the "tire" of a "automobile" on a graphic display screen, the related information obtained using the photographic subject information retrieval means 105 turns into both the information relevant to a "automobile", and the information relevant to a "tire."

[0022] furthermore, as information relevant to a photographic subject, in detail It adds to the ability of numeric data information about this image information, such as property data and structure data, etc. to be offered as related information by using not only the image information of a photographic subject but this image information as a key. Only not only in the information on the photographic subject which has appeared directly on the display screen as information relevant to this photographic subject as mentioned above usually, although it is thought that it exists, when the bonnet of the indirect thing which does not look direct, for example, an automobile, is displayed An "engine" etc. can be offered as related information, for example, and not only that image information but the information on property data, such as that engine performance, structure, etc., etc. can be offered [which it is considered to usually exist in this bonnet bottom] as related information of this engine.

[0023] Next, the photographic subject information retrieval means 105 asks for the screen-display size in the event of the photographic subject corresponding to each related information as follows about one or more related information obtained by retrieval, using the display-size decision means 106. First, it asks for the sense and the rate of a zoom of a video camera 108 at the event using the camera-control means 102. Next, the points h, i, j, and k on the unit sphere R corresponding to the points H, I, J, and K of the four corners of a graphic display screen are searched for by the same technique as the coordinate transformation means 104. Next, using said positional information and size information which are given to the coordinate and each related information of the points h, i, j, and k searched for, each photographic subject image computes the field of what percent of a graphic display screen is occupied, and makes it the screen-display size of each photographic subject.

[0024] Furthermore, about one or more related information obtained by retrieval, the photographic subject information retrieval means 105 chooses what fulfills predetermined conditions using the photographic subject information selection means 107, and said screen-display size for which it asked with the display-size decision means 106 displays only the selected related information on a display 110, and offers it to a user 109. As for the related information searched using the photographic subject information retrieval means 105, a user 109 does not necessarily ask for the all. For example, although two, the information relevant to a "automobile" and the information relevant to a "tire", will be obtained in above-mentioned "automobile" and the example of a "tire" using the photographic subject information retrieval means 105 if a user 109 specifies a "tire" on a graphic display screen If the user 109 specified the "tire" in the condition of having zoomed in, at this time, the suitable related information which should be offered to a user 109 is related with a "tire." On the other hand, the whole "automobile" is reflected in the screen, and if a "tire" is in the condition currently displayed so small that it is not set as the object of interest, it can be judged that a user's 109 interest is the information relevant to a "automobile." The photographic subject information selection means 107 performs selection of related information which was described above based on the screen-display size of the photographic subject searched for with the display-size decision means 106. If this screen-display size is expressed as a rate of a photographic subject image of occupying a graphic display screen, range conditions which it says, for example are 30% or more and 80% or less will be established, and only the related information to which the display size which fulfills this condition is given will be chosen. Although the example which chooses related information only using the rate of a photographic subject image of occupying a graphic display screen was shown here, it is also possible to realize more exact selection by in which location of a graphic display screen the core of a photographic subject exists and using information further.

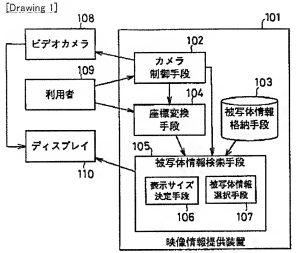
[0025]

[Effect of the Invention] Since according to this invention the information relevant to the photographic subject which the user specified on the display screen of an image inputted from a video camera is retrieved and it provides for a user while a user changes the sense and the rate of a zoom of a video camera as explained above, even if a user knows neither the identifier of a photographic subject to search, nor its keyword, he can get the related information of this photographic subject only by specifying the photographic subject on an image itself directly. For example, many automobiles are shown to a user in the trade fair of an automobile etc., and there is e very remarkable advantage on multimedia information utilization centering on an image like [if an automobile with a user is specified, while the automobile will zoom in / when the data is displayed and a user directs the bonnet of the automobile] engine detailed drawing and data being displayed.

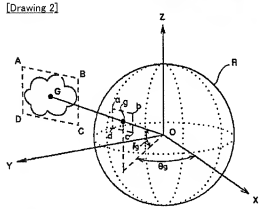
[Translation done.]

DRAWINGS

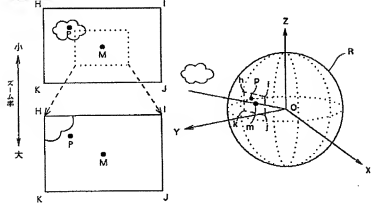
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]

CLAIMS

[Claim(s)]
[Claim 1] The information relevant to the photographic subject projected on the image inputted from a video camera at the real time is stored in the database. While a user is the image information offer approach with which identifies the photographic subject specified on said image, and a user is provided in quest of the information relevant to this photographic subject from a database and fives and installs said video camera in a position The sense and the rate of a zoom of this video camera are changed to arbitration. The photographic subject image projected on the image inputted from said video camera is mapped to the unit sphere which made the installation location of a video camera the zero. When the positional information and size information on the unit sphere of this map are given to the information relevant to a photographic subject, and are memorized and a user demands modification of the sense of a video camera, or the rate of a zoom When the sense or image dilation ratio of a video camera is changed according to this demand and a user specifies a photographic subject on the display screen of an image inputted from a video camera The image information offer approach characterized by asking for the location on said unit sphere corresponding to the specified screen location, and searching for the information relevant to the photographic subject currently displayed on the screen location which the user specified by comparing said positional information and size information which heve been remembered to be this positional information searched for.
[Claim 2] The image information offer approach according to claim 1 characterized by offering this related information to a user only when it asks for the display size on the graphic display screen of the photographic subject corresponding to said related information and this display size for which it asked is within the limits of predetermined using the sense and the rate of a zoom of a video camera at the time of said positional information and size information which are given to related information about each of one or more of said related informetion for which it asked, and a user specifying.
[Cleim 3] The information relevent to the photographic subject which exists in the image inputted from a video camera at the real time is stored in the detebase. It is image information offer equipment which a user identifies the photographic subject specified on seid image, end offers from a database to a user in quest of the information relevant to this photographic subject. A camera-control means to control the sense or the rate of a zoom of a video camera according to a demand of a user, The photographic subject image projected on the image inputted from said video camera is mapped to the unit sphere which made the installation location of a video camere the zero. A photographic subject information storing means to give the positional information and size information on the unit sphere of this map to the informetion relevant to this photographic subject, and to memorize them, A coordinate transformation meens to ask for the locetion on said unit sphere corresponding to the screen location which the user specified on the display screen of en image inputted from e video camera, Seid positional information searched for using this coordinate transformation means, said positionel information memorized by seid photographic subject information storing means, and size information are compared. Image information offer equipment cherecterized by having a photographic subject information retrieval means to search for the informetion relevent to the photographic subject currently displayed on said screen locetion specified by a user.
[Claim 4] The sense end the rate of a zoom of a video camere at the time of said positional information and size information which ere given to related information ebout each of one or more of said related information for which it asked, and a user specifying are used for said photographic subject information retrieval means. A display-size decision means to ask for the displey size on the graphic display screen of the photographic subject corresponding to said related information, Image information offer equipment eccording to cleim 3 characterized by having a photographic subject information selection means to choose only the related information of the photographic subject which has the display size for which it asked with this display-size decision means within the limits of predetermined.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned object, this invention according to claim 1 The information relevant to the photographic subject projected on the image inputted from a video camera at the real time is stored in the database. While a user is the image information offer approach with which identifies the photographic subject specified on said image, and a user is provided in quest of the information relevant to this photographic subject from a database and fixes and installs said vidao camera in a position The sense and the rate of a zoom of this video camera are changed to arbitration. The photographic subject image projected on the image inputted from said video camera is mapped to the unit sphere which made the installation location of a video camera the zero. When the positional information and siza information on the unit sphere of this map are given to the information relevant to a photographic subject, and ara memorized and a user demands modification of the sense of a video camera, or the rate of a zoom When the sense or image dilation ratio of a video camera is changed according to this demand and a user specifies a photographic subject on the display screen of an image inputted from a video camara Let it be a summary to ask for the location on said unit sphera corresponding to the specified screen location, and to saarch for the informetion relevant to the photographic subject currently displayed on the screen location which the user specified by comparing said positional information and size information which have been remembered to be this positional information searched for.
[0007] If it is in this invention according to claim 1, while mapping the photographic subject image in the image inputted from the video camera to an unit sphere, giving the positional informetion and size information on the unit sphere of this map to the information relevant to a photographic subject and memorizing them Changing the sense or imaga dilation ratio of a video camera by demand of a user Ask for the location on the unit sphere corresponding to the screen location of a photographic subject which the user specified on the display screen of an image inputted from a video camera, and the positional information and size information which have been remembered to be this positional information are compared. The information relevant to tha photographic subject currently displayed on the screen location specified by a user is searched for.
[0008] Moreover, the sense end the rate of a zoom of a video camera at the time of said positional information end size information which are given to related information about each of one or more of said related information for which it asked, and a user specifying in invention according to claim 1 are usad for this invention according to claim 2. Only whan you ask for the display size on the graphic display screen of the photographic subject corresponding to said related information and this display size for which it asked is within the limits of predetermined, let it be a summary to offer this related information to a user.
[0009] If it is in this invention according to claim 2, it asks for the display size on the graphic display screen of the photographic subject corresponding to ralated information, and only when this display size is within the limits of predetermined, this reletad information is offered to e user.
[0010] Furthermore, this invention according to claim 3 stores in the database the information relevant to the photographic subject which exists in tha image inputted from a video camera at the real time. It is image information offer equipment which e user identifies the photographic subject specified on said image, and offers from a database to a user in quast of the information relevant to this photographic subject. A camera-control means to control the sense or the rate of a zoom of a video camera according to a demand of e user, The photographic subject image projected on the image inputted from said video camera is mapped to the unit sphere which made the installation locetion of a video camera the zero. A photographic subject information storing means to give the positional information and size information on the unit sphere of this map to the information relevant to this photographic subject, and to memorize them, A coordinate transformation means to ask for the location on said unit sphere corresponding to the screen location which the user specified on the display screen of an image inputted from a video camera, Let it be a summary to have a photographic subject information retrieval means to search for the information relevant to the photographic subject currently displayed on said screen location which compered said positional information searched for using this coordinate transformation means, said positional information memorized by said photographic subject information storing means, and size information, and the user specified.
[0011] If it is in this invention according to claim 3, while mapping the photographic subject image in the image inputted from the video camera to an unit sphere, giving the positional information and size information on the unit sphere of this map to the information relevant to a photographic subject and memorizing them Controlling the sense or the rate of a zoom of a video camera by demand of a user Ask for the location on the unit sphere corresponding to the screen location of a photographic subject which the user specified on the display screen of an image inputted from a video camera, and the positional information and size information which have been remembered to be this positional information are compared. The information relevant to the photographic subject currently displayed on the screen location specified by a user is searched for.
[0012] This invention according to claim 4 is set to invention according to claim 3. Furthermore, said photographic subject information retrieval means The sense and the rate of a zoom of a video camera at the time of said positional information and size information which are given to related information about each of one or more of said related information for which it asked, and a user specifying are used. The display size for which it asked with a display-size decision means to ask for the display size on the graphic display screen of the photographic subject corresponding to said related information, and this display-size decision means makes it a summary to have a photographic subject information selection means to choose only the related information of the photographic subject which is within the limits of predetermined.
[0013] If it is in this invention according to claim 4, the display size on the graphic display screen of the photographic subject corresponding to related information chooses only the related information of the photographic subject which is within the limits of predetermined.
[0014]
[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained using a drawing.
[0015] Drawing 1 is the block diagram showing the configuration of the image information offer equipment which enforces the image information offer approach concerning the gestalt of operation of this invention. this drawing — setting — 101 — image information offer equipment and 102 — a camera-control means and 103 — a photographic subject information storing means and 104 — for a display-size decision means and 107, as for a video camera and 109, a photographic subject information selection means and 108 are [a coordinate transformation means and 105 / a photographic subject information retrieval means and 106 / a user and 110] displays.

[0016] The video camera 108 is attached in the four directions of vertical and horizontal at the pivotable universal head, and has composition which it is remotely operated with the camera-control means 102, and can change the sense of a camera. Furthermore, the rate of a zoom of a lens is also adjustable and this can also operate it by remote control with the camera-control means 102. However, suppose that the installation location of a video camera 108 is being fixed. The image inputted from a video camera 108 is displayed on up to a display 110.

[0017] The camera-control means 102 controls a video camera 108 to receive the demand for changing the sense or the rate of a zoom of a video camera 108 from a user 109, and to suit the demanded sense or the rate of a zoom. For example, a video camera 108 can be moved rightward by giving the damand for rotating a video camera 108 rightward to the camera-control means 102 and desired space can be projected [of the space in the image as which the user 109 is displayed on the display 110 now] to see right-hand side to a slight degree. For example, when a user 109 wants to enlarge the photographic subject in the image displayed on the display 110 now to a slight degree, and to see it, by giving the camera-control means 102, the rate of a zoom of a video camera 108 can be expanded to the size of a request of raising end a photographic subject, and the demand for making the rate of a zoom of a video camera 108 increase can be seen. In addition, as technique for a user 109 to demand modification of the sense of a video camera 108, or the rate of a zoom, how to display a control panel on a display 110, the method of forming the controller for remote control, etc. can be considered.

[0018] The photographic subject information storing means 103 has memorized related information, such as a text which described the description of each photographic subject about the photographic subject from which an existence location does not change in the actual world. When the photographic subject turns a video camera 108 in which direction, the positional information and size information which show whether it appears in an image are given to the related information of each photographic subject. Positional information and size information can be defined as the installation location of a video camera 108 is shown in drawing 2 , using the unit sphere made into the zero. In drawing 2 , the video camera is fixed and installed in Zero O. The point of the arbitration on an unit sphere R can express the location by the polar coordinate (theta, gamma) which used the angle of rotation theta from the X-axis for example, on XY flat surface to Y shaft orientations, and the angle of rotation gamma from XY flat surface to Z shaft orientations. Therefore, the positional information and size information on a photographic subject T in drawing 2 For example, the points A, B, C, and D of tha four corners of the rectangle surrounding the central point G of a photographic subject T and e photographic subject T are mapped to up to an unit sphare, respactively. a map — a point — g — a — b — c — d — a location — expressing — a polar coordinate — a group — {(thetag and gammag) — (— theta — a — gamma — a —) — (— theta — b — gamma — b —) — (— theta — c — gamma — c —) —} (thatad and gammad) — ****** — it can express .

[0019] The coordinate transformation means 104 will search for the point p on said unit sphere R corresponding to the spacified screen location P as follows, for example, if e user 109 specifies a spacific photographic subject on the image currently displayed on the display 110 using pointing equipment like a mouse. As shown in the example of drawing 3 , in the condition of having turned the video camera 108 in the specific direction, the central point M of the image displayed on a display 110 is always matched with the point m of a meaning on said unit sphere R. On the other hand, the points h, i, j, and k on the unit sphere R corresponding to the points H, I, J, and K of the four corners of a graphic displey screen chenge with the rates of a zoom of a video camera 108. Although the rate of a zoom of a video camera 108 and the reletion of Points h, i, j, and k change with video cameras 108 to be used, this relation can be defined using a formula or a conversion teble every video camere 108. The coordinate transformation means 104 will ask for the sense and the rate of a zoom of a video camera 108 at the event using the camera-control means 102, if a user 109 specifies a photographic subject on a graphic display screen.

[0020] Naxt, the coordinate of the point m on the unit sphere R corresponding to the central point M of the image by which it is indicated by current from the sense of the video camera 108 for which it asked is searched for. Next, the coordinate of the points h, i, j, and k at the event is searched for using the rate of a zoom of the video camera 108 for which it asked, and the coordinate of Point m. And the coordinate of the point p on the unit sphere R corresponding to the screen location P specified by a user 109 is computed from the relative physical relationship of the coordinate of Points h, i, j, and k and Points H, I, J, and K which were searched for, and Point P. The coordinate transformation means 104 gives the coordinate of the point p searched for to the photographic subject information retrieval means 105.

[0021] Tha photographic subject information retrieval means 105 reads the related information of the photographic subject stored in the photographic subject information storing means 103, comparas the coordinate of the point p given from said positional information and size information which are given to them, and the coordinate transformation means 104, and searches the related information of the photographic subject which exists on the graphic display screen specified by a user 109. If the positional information and size information on the unit sphere R given to photographic subject information include the coordinate of the four corners a, b, c, and d of the rectangle which surrounds a photographic subject image as mentioned above, the coordinate of Point p can sort out the related information which corresponds with confirming whether it is contained in the rectangle surrounding each photographic subject. The related information obtained by retrieval is not necessarily one or less. For example, while regarding the whole "automobile" as a photographic subject end storing related information called the identifier and model in the photographic subject information storing means 103 If it regards as one photographic subject with which the "tire" of the automobile which is elegance a part became independent and related information called the manufacturar and size is also simultaneously stored in the photographic subject information storing means 103 When a user 109 specifies the "tire" of a "automobile" on a graphic display screen, the related information obtained using the photographic subject information retrieval means 105 turns into both the information relevant to a "automobile", and the information relevant to a "tire."

[0022] furthermore, as information relevant to a photographic subject, in detail It adds to the ability of numeric data information about this image information, such as property data and structure data, etc. to be offered as related information by using not only the image information of a photographic subject but this image information as a key. Only not only in the information on the photographic subject which has appeared directly on the display screen as information relevant to this photographic subject as mentioned above usually, although it is thought that it exists, when the bonnet of the indirect thing which does not look direct, for example, an automobile, is displayed An "engine" etc. can be offered as related information, for example, and not only that image information but the information on property data, such as that engine performance, structure, etc., etc. can be offered [which it is considered to usually exist in this bonnet bottom] as related information of this engine.

[0023] Next, the photographic subject information retrieval means 105 asks for the screen-display size in the event of the photographic subject corresponding to each related information as follows about one or more related information obtained by retrieval, using the display-size decision means 106. First, it asks for the sense and the rate of a zoom of a video camera 108 at the event using the camera-control means 102. Next, the points h, i, j, and k on the unit sphere R corresponding to the points H, I, J, and K of the four corners of a graphic display screen are searched for by the same technique as the coordinate transformation means 104. Next, using said positional information and size information which are given to the coordinate and each related information of the points h, i, j, and k searched for, each photographic subject image computes the field of what percent of a graphic display screen is occupied, and makes it the screen-display size of each photographic subject.

[0024] Furthermore, about one or more related information obtained by retrieval, the photographic subject information retrieval means 105 chooses what fulfills predetermined conditions using the photographic subject information selection means 107, and said screen-display size for which it asked with the display-size decision means 106 displays only the selected related information on a display 110, and offers it to a user 109. As for the related information searched using the photographic subject information retrieval means 105, a user 109 does not

necessarily ask for the all. For example, although two, the information relevant to a "automobile" and the information relevant to a "tire", will be obtained in above-mentioned "automobile" and the example of a "tire" using the photographic subject information retrieval means 105 if a user 109 specifies a "tire" on a graphic display screen If the user 109 specified the "tire" in the condition of having zoomed in, at this time, the suitable related information which should be offered to a user 109 is related with a "tire." On the other hand, the whole "automobile" is reflected in the screen, and if a "tire" is in the condition currently displayed so small that it is not set as the object of interest, it can be judged that a user's 109 interest is the information relevant to a "automobile." The photographic subject information selection means 107 performs selection of related information which was described above based on the screen-display size of the photographic subject searched for with the display-size decision means 106. If this screen-display size is expressed as a rate of a photographic subject image of occupying a graphic display screen, range conditions which it says, for example are 30% or more and 80% or less will be established, and only the related information to which the display size which fulfills this condition is given will be chosen. Although the example which chooses related information only using the rate of a photographic subject image of occupying a graphic display screen was shown here, it is also possible to realize more exact selection by in which location of a graphic display screen the core of a photographic subject exists and using information further.

[Translation done.]

PRIOR ART

[Description of the Prior Art] The sense and the rate of a zoom of a video camera are matched and memorized to each of the manual operation button which has more than one, and if a manual operation button is pushed by the user, the equipment to which a video camera is moved so that the sense and the rate of a zoom of a video camera corresponding to the manual operation button may be suited is shown in the report "a presetting (automatic tracking) system" of the September, 1994 issue printing of a journal "image information" (Industrial Development Device publication). If the identifier of the photographic subject which memorizes and corresponds to a manual operation button in quest of the sense and the rate of a zoom of a video camera for projecting focusing on it in this equipment for every photographic subject which can be caught with a video camera is given as a label of a manual operation button, unless the location where a photographic subject exists will change, a user can specify a photographic subject to see by the identifier, and can see that image through a video camera.
[0003] In addition to the sense and the rate of a zoom of a video camera, also match with a manual operation button related information, such as a text which described the description of a photographic subject further, and it is memorized, and it is possible to offer the related information according to the image of the photographic subject specified by a user.

[Translation done.]

TECHNICAL FIELD

[Field of the Invention] This invention relates in more detail to the image information offer approach and the equipment with which retrieve from a database the information relevant to the photographic subject which the user specified on the image inputted at the real time from the video camera, and a user provides about the image information offer approach and the equipment which provide a user with the information relevant to the photographic subject in the image picturized with the video camera, while a user changes the sense and the rate of a zoom of a video camera.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Although the conventional image information offer approach mentioned above could be applied when the user knew the identifier of an interested photographic subject and wanted to search the image and related information from the identifier of a photographic subject, it specified directly the photographic subject in which the user looked at the image and got interested on the image, and had the problem that the identifier or related information could not be searched.
[0005] This invention was made in view of the above, and the place made into the object is to offer the image information offer approach and equipment which offer the information relevant to the photographic subject which the user specified directly on the image inputted at the real time from the video camera, while a user changes the sense and the rate of a zoom of a video camera.

[Translation done.]